REMARKS

The Applicant would like to thank the Examiner for the timely response in which a number of claims were rejected under 35 U.S.C. 112, first paragraph. In particular, the Examiner states that the rejected claims contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor at the time the application was filed had possession of the invention as claimed. More specifically, the Examiner stated that a thorough search of the specification failed to find support for, "examining the coefficients of a DCT block to determine an End of Block (EOB) length" and "selecting an iDCT algorithm from a plurality of iDCT algorithms according to the EOB length" as recited in claim 1. The Applicant respectfully directs the Examiner's attention to Figure 3 and Figure 4 as described at page 17, the relevant portions of which are reproduced below:

> 1) EOB address probability distributions may vary significantly for different video shots and different bit rates. For this reason, the optimal mix of iDCT routines will vary from shot to shot. ***A shot is a sequence of frames bounded on each side by a video transition, for example a cut frame, a dissolve, or a cross-dissolve.*** Average histograms for B-frames (the most common frames) contained in both commercially compressed and reference model MPEG-2 compressed 'Football', 'Space Station', 'Flower Garden', and 'Sony' sequences are shown in Figure 3. These shots are available at:
>
> 2) Within a shot and over spans of a few hundred frames EOB histograms often show little significant variance. ***Therefore, the optimal mix of iDCT routines remains fairly static within an individual shot.*** Figure 4 shows superimposed B-frame histograms for the commercially encoded 'DVM Demo' sequence at 4 Mbps.

And Figure 5 described at page 17 - 18 (the amended version)

> Referring now to Figure 5, a block diagram illustrating the logical components of an embodiment of the present invention is shown generally as 200. As shown in Figure 5, switch 210 accepts a plurality of inputs from three sources, namely: DCT coefficients 212, EOB Address 214, and Picture Type Bit rate 216. Picture Type Bit rate 216 affects the EOB histogram, as more macroblocks will have larger EOBs since more coefficients will be non-zero at higher bitrates. Based upon the input provided to switch 210, one of a plurality of iDCT algorithms from

> set 220 is selected. ***Subset 222 contains iDCT algorithms iDCT high and iDCT low, based upon the EOB histogram of B-frames in the sequences illustrated in Figure 3.*** For example, a version of iDCT_high would be selected for an ***EOB length of 39 or 50***. Similarly a version of iDCT_low would be selected for an ***EOB length of 14 or 15***. Figure 5 shows two independent choices for each of iDCT_high and iDCT_low, resulting in four different customized iDCT algorithms that may be specified for decoding the B-frames of a particular shot. As discussed earlier, iDCT_AC, iDCT_DC and iDCT_Normal are selected based upon the criteria defined by Murata et al.

Therefore, the Applicant believes that the specification does provide support for those claims rejected under 35 U.S.C. 112. For example, the X axis of both Figures 3 and 4 clearly state "**EOB length**" indicating the size of the respective EOB macroblock where those macroblocks having a greater length have commensurately more non zero coefficients at higher bitrates. In this way, by determining a particular EOB length, the invention as recited in claim 1 provides for a selection of a particular iDCT algorithm. The examples shown in Figure 5 provides that an **EOB length of 39 or 50** would be used to select iDCT_high and an **EOB length of 14 or 25** would be used to select iDCT_low.

In this way the invention provides for an optimal selection of algorithms based upon an EOB length provided by an EOB histogram of B frames (as shown in Figures 3 and 4). Accordingly, the Applicant requests that the Examiner withdraw the 35 U.S.C. 112, first paragraph rejection.

A number of claims have been rejected under 35 U.S.C. 103(a) as being unpatentable over Murata (previously discussed) and of record in view of U.S. Published Patent Application US2002/0027954 with Singh as inventor that describes a method and device for reducing the average number of computations required for inverse discrete cosine transform (iDCT) by gathering individual block statistics during inverse quantization. At paragraph [0007], Singh classifies the input data blocks into a small number of classes based on the **location and frequency of sub-blocks (within the input data block) having non-zero valued DCT coefficients** where each data block falls into one of the classes. For each class, an iDCT algorithm that best exploits the pattern of non-zero sub-blocks of that class is then selected. Furthermore, at paragraph [0010], "the classification of the blocks is based on the location, within the 8 x 8 block, of the sub-blocks that contain non-zero DCT coefficients". Therefore, Singh characterizes each input data block based upon a predetermined pattern of sub-blocks having non-zero valued DCT coefficients. Based upon this characterization, an appropriate

iDCT algorithm is selected for that particular data block based on the pattern of sub-blocks. Furthermore, since each DCT data block must be characterized in order to assign the appropriate iDCT algorithm, Singh requires a substantial commitment of computational resources.

In contrast to Singh, the invention as recited in claim 1 teaches determining an End of Block (EOB) length for the entire data block and then based upon the EOB length for the data block, a particular iDCT algorithm is selected that is optimized for that particular EOB length. In particular, claim 1 recites:

> "A method for executing inverse discrete cosine transform (iDCT) algorithms, comprising;
>
> a) examining the coefficients of a DCT block to determine an End of Block (EOB) length;
>
> b) selecting an iDCT algorithm according to the EOB length; and
>
> c) executing the selected iDCT algorithm"

Therefore, by relying upon the computationally efficient process of determining an EOB length for an entire data block, the invention as recited in claim 1 requires far less computational resources as would be required by Singh (since Singh requires that each data block be subdivided into sub blocks each of which is then characterized based upon determining a pattern of non-zero DCT coefficients).

Accordingly, the Applicant believes that Singh does nothing to cure the admitted deficiencies of Murata and therefore respectfully requests that the Examiner withdraw the obviousness type rejection of claim 1 and any claims dependent thereon.

Independent claims 4, 6, and 11 recite the same limitations as claim 1 albeit as a system and computer program and are believed therefore to also be allowable as are all claims dependent thereon.

CONCLUSION

In conclusion, the Applicant believes that none of the cited references taken singly in any combination anticipate or render any of the pending claims obvious and the Applicant respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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